



DEPARTMENT OF COMMERCE

International Trade Administration

Rice University, et. al, Notice of Decision on Application for Duty-Free Entry of Scientific Instruments

This is a decision pursuant to section 6(c) of the Educational, Scientific, and Cultural Materials Importation Act of 1966 (Pub. L. 89-651, as amended by Pub. L. 106-36; 80 Stat. 897; 15 CFR part 301). On May 4, 2023, the Department of Commerce published a notice in the *Federal Register* requesting public comment on whether instruments of equivalent scientific value, for the purposes for which the instruments identified in the docket(s) below are intended to be used, are being manufactured in the United States. *See Application(s) for Duty-Free Entry of Scientific Instruments, 88 FR 28489-91, May 4, 2023 (Notice)*. We received no public comments.

Docket Number: 23-005. Applicant: Rice University, 6100 Main Street, Houston, TX 77005. Instrument: Full-ring Shaped Ultrasonic Transducer Array. Manufacturer: HEBEI ULISO TECH CO., LTD., China. Intended Use: The instrument will be used in the research of photoacoustic tomography, which will be used for photoacoustic signal full-view detection. The instrument will be integrated into a customized photoacoustic imaging system for visualization of whole body dynamics inside small animals for biomedical applications. For example, the developed imaging system can be used to study tumor metastasis, monitor chemotherapy, and test new drugs. The overall goal of this research is to develop a pre-clinical molecular imaging platform for cancer study. The instrument will be used for multiple imaging related undergraduate/graduate level courses in electrical engineering at Rice University, including computation imaging, computer vision, optical imaging, medical imaging, etc. The instrument will be integrated into a customized medical imaging system consisting of optics, ultrasonic

sensing, data acquisition and image reconstruction. Each component will be discussed in related courses. Students will also tour the research lab and operate the imaging system to gain hands-on experience.

Docket Number: 23-006. Applicant: University of Wisconsin Stout, 712 Broadway Street, S, Menomonie, WI 54751. Instrument: 156 Direction Photographic Lighting

Cage. Manufacturer: ESPER Designs, Ltd., United Kingdom. Intended Use: To enable/improve the capture of objects with difficult appearance properties. To increase accessibility to data and software supporting photogrammetry and inverse rendering research at other institutions. To empower the digital preservation and exhibition of three-dimensional cultural heritage artifacts for galleries, libraries, archives, and museums.

The grant was awarded to the University of Wisconsin Stout, a primarily undergraduate, public university. The equipment will be housed in the university Fabrication Lab which is accessible to all students on campus. It will also be used to support curriculum in courses for the Game Design and Development (GDD) Program, the Professional Communication and Emerging Media (PCEM) Program, and other design programs.

Docket Number: 23-007. Applicant: The Board of Trustees of the Colorado School of Mines for and on Behalf of the Colorado School of Mines, 1500 Illinois Street, Golden, CO

80401. Instrument: Oxide Molecular Beam Epitaxy System. Manufacturer: Scienta Omicron, Germany. Intended Use: Oxide thin films will be grown for materials

discovery and materials science research. The identity of the materials or phenomena to be studied: Oxide and metal thin film materials that are insulating, semiconducting, or metals (ie. YMnO_3 , IrO_2). The properties of the materials or phenomena to be investigated: Primarily study of their functional properties (such as ferroelectric, piezoelectric, and/or ferromagnetic) or for growth of surfaces relevant to energy conversion and storage applications (electrolysis, fuel

cells, ion transport). The experiments to be conducted: Thin film growth using in situ reflection high energy electron diffraction (RHEED) surface monitoring and studies. The objectives pursued during the investigations are the development of novel materials for functional and energy applications, fundamental science surface and materials properties studies. The techniques used in employing the instrument to achieve the objectives: Oxide molecular beam epitaxy growth, RHEED.

Docket Number: 23-008. Applicant: Arizona State University, 1711 S. Rural Road, Tempe, AZ 85281. Instrument: Cheetah 1 X-by-wire Automated Vehicle Chassis. Manufacturer: Shanghai Liaison Tech Co., Ltd., China. Intended Use: The Cheetah Chassis (model cars) will be used to develop a small testbed, and add IMU sensors, GPS, mmWave radar, communication modules, and motor controllers on each of the Cheeta Chassis. Experiments will be run on model cars to test the sensing and connectivity between vehicles, with the objectives being to test functionalities including, V2V and V2I communications, sensing and vehicle automation control algorithms. First, simulation studies will run in the lab, and then implement the modules on the testbed and run experiments in parking lots to achieve the objectives.

Docket Number: 23-009. Applicant: University of Chicago, 5640 S Elis Avenue, ERC LL248, Chicago, IL 60637. Instrument: Fiber Laser and Fiber Amplifier. Manufacturer: Precilasers, China. Intended Use: Experimentally demonstrate entanglement generation between our atoms by creating Bell Pairs (a state of two maximally entangled atoms) and measuring parity oscillations when we drive them with a laser. Next, we will use our ability to generate entanglement to create and measure more exotic entangled states, such as “cluster states,” which promise to be useful for measurement-based quantum computation. There will be other quantum phenomena we will investigate along the way, such as using our entangled states

for electric field measurements, but eventually we will experimentally develop single-atom laser control, which will allow us to perform almost arbitrary programmable quantum computation.

Docket Number: 23-010. Applicant: Arizona State University, 1711 S. Rural Road, Tempe, AZ 85281. Instrument: Cheetah 1 X-by-wire Automated Vehicle Chassis. Manufacturer: Shanghai Liaison Tech Co., Ltd., China. Intended Use: The Cheetah Chassis (model cars) will be used to develop a small testbed, and add IMU sensors, GPS, mmWave radar, communication modules, and motor controllers on each of the Cheeta Chassis. Experiments will be run on model cars to test the sensing and connectivity between vehicles, with the objectives being to test functionalities including V2V and V2I communications, sensing and vehicle automation control algorithms. First, simulation studies will run in the lab, and then implement the modules on the testbed and run experiments in parking lots to achieve the objectives.

Docket Number: 23-011. Applicant: Arizona State University, 1711 S. Rural Road, Tempe, AZ 85281. Instrument: Cheetah 1 X-by-wire Automated Vehicle Chassis. Manufacturer: Shanghai Liaison Tech Co., Ltd., China. Intended Use: The Cheetah Chassis (model cars) will be used to develop a small testbed, and add IMU sensors, GPS, mmWave radar, communication modules, and motor controllers on each of the Cheeta Chassis. Experiments will be run on model cars to test the sensing and connectivity between vehicles, with the objectives being to test functionalities including V2V and V2I communications, sensing, and vehicle automation control algorithms. First, simulation studies will run in the lab, and then implement the modules on the testbed and run experiments in parking lots to achieve the objectives.

Docket Number: 23-012. Applicant: Drexel University, 3141 Chestnut Street, Philadelphia, PA 19104. Instrument: Roll-to-Roll Coater. Manufacturer: InfinityPV ApS, Denmark.

Intended Use: The instrument will be used to study the processing of halide perovskite thin films for application in solar cells. Perovskites have ideal optical and electronic properties for solar energy conversion, but work remains to understand how to obtain these desirable properties while processing in a high-speed roll-to-roll manner. Vary coating, drying, and annealing conditions to understand how processing affects material properties. The objective is to uncover conditions that lead to photovoltaic-grade perovskite films at web speeds larger than 1 m/min. The instrument must fit in a fume hood and within the project budget. This research is supported by the National Science Foundation under the award CMMI-1933819.

Docket Number: 23-013. Applicant: New Mexico Institute of Mining and Technology Magdalena Ridge Observatory Interferometer (MROI), 801 Leroy Place, Socorro, NM 87801.

Instrument: Unit Telescope. Manufacturer: Advanced Mechanical and Optical Systems (AMOS), Belgium. Intended Use: To better understand the universe and the processes that take place within it by observation of objects whose structure, origins and fate are not properly understood at present. These research areas are fundamental to expanding the knowledge of particle physics, as well as understanding the origins of the Universe and Earth.

Dated: May 25, 2023.

Gregory W. Campbell,
Director, Subsidies and Economic Analysis,
Enforcement and Compliance.

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